

ABSTRACT OF THE DISCLOSURE

A voltage controlled oscillator circuit is shown using multiple delay stages with the last stage looped back out of phase to the first stage. Each stage delay is formed by charging one or more capacitors. The circuitry uses active components demonstrating a square law relationship between a control voltage and a resulting current. The current is ultimately used to charge the delay capacitor. The net effect is a linear relationship of the VCO frequency and an input control voltage. The range of the linear relationship is extended by using square law current sources to provide suitable currents that extend the linear range when other active devices are no longer supporting the square law relationship. In addition bipolar device are used to compensate for temperature and batch to batch processing effects of FET devices.